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EXAMINER	
PATANKAR, ANEETA V	
ART UNIT	PAPER NUMBER
2627	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,318	IMURA ET AL.	
	Examiner	Art Unit	
	ANEETA PATANKAR	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/23/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/23/2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/23/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, 8, 9 and 11** are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Pub. No. 2002/0036963 A1 to *Shimoda*.

As to **claim 1**, *Shimoda* discloses an optical information recording/reproducing apparatus, comprising: an optical recording medium for storing information with marks of a plurality of lengths (Paragraphs 0006-0007); light irradiation means for irradiating the optical recording medium with a light beam so as to form each mark (Fig. 1, paragraphs 0051-0052); light driving means for allowing the light irradiation means to emit light with desired light intensity (Fig. 1, paragraphs 0063-0064); recording waveform control means for controlling a recording waveform in accordance with a length of a mark to be recorded (Fig. 1, 12A, paragraphs 0066-0072); recording output variation means for instructing the light driving means to perform test recording in a light intensity learning region on the optical recording medium with desired light intensity (Fig. 4, paragraphs 0080-0081); modulation degree detection means for detecting a degree of modulation from an amplitude of a reproduced signal of a test-recorded

mark (Fig. 1, paragraph 0052); waveform distortion detection means for detecting waveform distortion of the reproduced signal of the test-recorded mark (Fig.1, paragraph 0083); first light intensity calculation means for calculating recording light intensity corresponding to an allowable upper limit degree of modulation for the optical recording medium based on the degree of modulation of the reproduced signal of each of the plural marks test-recorded with a plurality of light intensity values in the light intensity learning region and the allowable upper limit degree of modulation. The plurality of light intensities being selected from variable data pieces (Dc11, Dc21, …., Dcn1) and the learning region being storage section (14 (Fig. 9, 10, paragraphs 0110-0115); second light intensity calculation means for calculating recording light intensity corresponding to an allowable waveform distortion amount for the optical recording medium based on the waveform distortion amount of the reproduced signal of each of the plural marks test-recorded with a plurality of light intensity values in the light intensity learning region and the allowable waveform distortion amount. The plurality of light intensities being selected from variable data pieces (Dc11, Dc21, …., Dcn1) and the learning region being storage section (14) (Fig. 9, 10, paragraphs 0108-0115); allowable light intensity range determination means for determining a light intensity range for recording information on the optical recording medium based on the recording light intensity corresponding to the allowable upper limit degree of modulation and the recording light intensity corresponding to the allowable waveform distortion amount, where in step S114 the modulation depth is used in

calculating the allowable power emission ranges which is directly related to light intensity. (Fig. 4, 5, paragraphs 0085-0088, 0091 and optimum light intensity determination means for determining optimum recording light intensity within the light intensity range determined by the light intensity range determination means (Fig. 4, paragraphs 88, 91).

As to **claim 2**, *Shimoda* discloses the optical information recording/reproducing apparatus wherein the recording waveform control means outputs a recording waveform having high first recording light intensity for recording a mark whose length is shorter than a first mark length (Fig.1, 12A, paragraphs 66-72), and outputs a recording waveform having the first recording light intensity for a front-end portion and a rear-end portion of the recording waveform and having second recording light intensity not higher than the first recording light intensity for an intermediate portion of the recording waveform for recording a mark whose length is not shorter than the first mark length (Fig. 1, paragraphs 63-64).

As to **claim 8**, *Shimoda* discloses a method for learning recording light intensity of an optical information recording/reproducing apparatus for recording information by irradiating an optical recording medium having a light intensity learning region with a light beam so as to form marks of a plurality of lengths (Fig. 1, paragraphs 51-52), wherein a mark of predetermined mark length or longer is formed with the light beam in conformity with a recording waveform in which a front-end portion and a rear-end portion of the recording waveform are

set to have high first recording light intensity and an intermediate portion of the recording waveform is set to have second recording light intensity not higher than the first recording light intensity, whereby the mark is formed (Fig. 1, paragraphs 63-64), the method comprising: changing each of the first recording light intensity and the second recording light intensity step by step by a predetermined amount while maintaining a ratio between the first recording light intensity and the second recording light intensity at a constant value, and recording a light intensity learning pattern composed of a plurality of marks including an approximately longest mark in the light intensity learning region (Fig. 1, 12A, paragraphs 66-77); detecting a degree of modulation of a reproduced signal of each of the plural marks in the recorded light intensity learning pattern (Fig. 1, paragraph 52); detecting a waveform distortion amount of a reproduced signal of the approximately longest mark in the recorded light intensity learning pattern (Fig. 1, paragraph 83); obtaining recording light intensity corresponding to an allowable upper limit degree of modulation based on the detected degree of modulation and the allowable upper limit degree of modulation (Fig. 4, 5, paragraphs 85-88, 91); obtaining recording light intensity corresponding to an allowable distortion amount based on the detected waveform distortion amount and the allowable waveform distortion amount (Fig. 4, 5, paragraphs 85-88, 91); comparing the recording light intensity corresponding to the allowable upper limit degree of modulation with the recording light intensity corresponding to the allowable waveform distortion amount (Fig. 4, 5, paragraphs 85-88, 91); and setting

recording light intensity for recording information within a range between an upper limit and a lower limit, the upper limit being the recording light intensity corresponding to the allowable upper limit degree of modulation and the lower limit being the recording light intensity corresponding to the allowable waveform distortion amount, when the recording light intensity corresponding to the allowable upper limit degree of modulation is not lower than the recording light intensity corresponding to the allowable waveform distortion amount (Fig. 9, 11, paragraphs 110-114).

As to **claim 9**, *Shimoda* discloses the method for learning recording light intensity according to claim 8, further comprising (h) setting a part of the intermediate portion of the recording waveform to have the first recording light intensity when the recording light intensity corresponding to the allowable upper limit degree of modulation is lower than the recording light intensity corresponding to the allowable waveform distortion amount and the intermediate portion is set to have the second recording light intensity (Fig. 9, 11, paragraphs 110-114).

As to **claim 11**, *Shimoda* discloses a method for learning recording light intensity of an optical information recording/reproducing apparatus for recording information by irradiating an optical recording medium having a light intensity learning region with a light beam so as to form marks of a plurality of lengths, wherein a mark of predetermined mark length or longer is formed with the light beam in conformity with a recording waveform in which a front-end portion and a

rear-end portion of the recording waveform are set to have high first recording light intensity and an intermediate portion of the recording waveform is set to have second recording light intensity not higher than the first recording light intensity, whereby the mark is formed, the method comprising: changing the second recording light intensity step by step by a predetermined amount while maintaining the first recording light intensity at a constant value, and recording a light intensity learning pattern composed of a plurality of marks including an approximately longest mark in the light intensity learning region (Fig. 1, 12A, paragraphs 66-77); detecting a degree of modulation of a reproduced signal of each of the plural marks in the recorded light intensity learning pattern (Fig. 1, paragraph 52); detecting a waveform distortion amount of a reproduced signal of the approximately longest mark in the recorded light intensity learning pattern (Fig. 1, paragraph 83); obtaining recording light intensity corresponding to an allowable upper limit degree of modulation based on the detected degree of modulation and the allowable upper limit degree of modulation (Fig. 4, 5, paragraph 85-88, 91); obtaining recording light intensity corresponding to a target waveform distortion amount based on the detected waveform distortion amount and the target waveform distortion amount (Fig. 4, 5, paragraphs 85-88, 91); comparing the recording light intensity corresponding to the allowable upper limit degree of modulation with the recording light intensity corresponding to the target waveform distortion amount (Fig. 4, 5, paragraphs 85-88, 91); and setting the recording light intensity corresponding to the target waveform distortion amount

as the second recording light intensity, and determining a ratio between the first recording light intensity and the set second recording light intensity as an optimum light intensity ratio when the recording light intensity corresponding to the allowable upper limit degree of modulation is not lower than the recording light intensity corresponding to the target waveform distortion amount (Fig. 1, 11, paragraphs 110-114).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 3-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Pub. No. 2002/0036963 A1 to *Shimoda* in view of U.S. Patent Pub. No. 2001/0033534 A1 to *Takeda et al*.

As to **claim 3**, *Shimoda* is deficient in disclosing the optical information recording/reproducing apparatus wherein the recording output variation means sets the first recording light intensity and the second recording light intensity variably while maintaining a ratio between the first recording light intensity and the second recording light intensity at a constant value.

However, *Takeda* discloses the optical information recording/reproducing apparatus wherein the recording output variation means sets the first recording light intensity and the second recording light intensity variably while maintaining a ratio between the first recording light intensity and the second recording light intensity at a constant value (Fig. 8, paragraphs 46-48).

Shimoda and *Takeda* are analogous art because they are from the same field of endeavor with respect to optical disk recording apparatuses.

At the time of invention, it would have been obvious to a person of ordinary skilled in the art to have created a information recording apparatus that comprises a light irradiation means and be able to adjust the light recording intensity as taught by *Takeda*. The suggestion/motivation would have been in order to be able to choose the optimum recording power (Paragraphs 46-48).

As to **claim 4**, *Shimoda* discloses the optical information recording/reproducing apparatus, wherein the allowable light intensity range determination means compares the recording light intensity corresponding to the allowable upper limit degree of modulation with the recording light intensity corresponding to the allowable waveform distortion amount (Fig. 4 and 5, paragraphs 85-88, 91), and the allowable light intensity range determination means determines the recording light intensity range such that the recording light intensity corresponding to the allowable upper limit degree of modulation is an upper limit and the recording light intensity corresponding to the allowable waveform distortion amount is a lower limit when the recording light intensity

corresponding to the allowable upper limit degree of modulation is not lower than the recording light intensity corresponding to the allowable waveform distortion amount (Fig. 6 and 10, paragraphs 117-119), while the allowable light intensity range determination means instructs the recording waveform control means to output a recording waveform having the first light intensity for a part of an intermediate portion of the recording waveform for a mark whose length is not shorter than a second mark length that is longer than the first mark length when the recording light intensity corresponding to the allowable upper limit degree of modulation is lower than the recording light intensity corresponding to the allowable waveform distortion amount (Fig. 1 and 12A, paragraphs 66-72).

As to **claim 5**, *Shimoda* discloses the optical information recording/reproducing apparatus wherein the allowable light intensity range determination means compares the recording light intensity corresponding to the allowable upper limit degree of modulation with the recording light intensity corresponding to the allowable waveform distortion amount (Fig. 4 and 5, paragraphs 85-88, 91), and the allowable light intensity range determination means determines the recording light intensity range such that the recording light intensity corresponding to the allowable upper limit degree of modulation is an upper limit and the recording light intensity corresponding to the allowable waveform distortion amount is a lower limit when the recording light intensity corresponding to the allowable upper limit degree of modulation is not lower than the recording light intensity corresponding to the allowable waveform distortion

amount (Fig. 6 and 10, paragraphs 117-119), while the allowable light intensity range determination means instructs the recording output variation means to change the ratio between the first recording light intensity and the second recording light intensity so as to increase the second recording light intensity when the recording light intensity corresponding to the allowable upper limit degree of modulation is lower than the recording light intensity corresponding to the allowable waveform distortion amount (Fig 1 and 12A, paragraphs 66-72).

As to **claim 6**, *Shimoda* discloses An optical information recording/reproducing apparatus, comprising: an optical recording medium for storing information with marks of a plurality of lengths (Paragraphs 6-7); light irradiation means for irradiating the optical recording medium with a light beam so as to form each mark (Fig. 1, paragraphs 51-52); light driving means for allowing the light irradiation means to emit light with desired light intensity (Fig. 1, paragraphs 63-64); recording waveform control means for outputting a recording waveform having high first recording light intensity when a mark to be recorded has a length shorter than a first mark length (Fig. 1 and 12A, paragraphs 66-72), and outputting a recording waveform having the first recording light intensity for a front-end portion and a rear-end portion of the recording waveform and having second recording light intensity not higher than the first recording light intensity for an intermediate portion of the recording waveform when a mark to be recorded has a length not shorter than the first mark length (Fig. 1, paragraph 63-64); recording output variation means for setting the second recording light

intensity variably while maintaining the first recording light intensity at a constant value, and instructing the light driving means to perform test recording in a light intensity learning region on the optical recording medium (Fig. 4, paragraphs 80-81); modulation degree detection means for detecting a degree of modulation from amplitude of a reproduced signal of a test-recorded mark (Fig. 1, paragraph 52); waveform distortion detection means for detecting waveform distortion of a reproduced signal of the test-recorded mark (Fig. 1, paragraph 52); first light intensity calculation means for calculating recording light intensity corresponding to an allowable upper limit degree of modulation for the optical recording medium based on the degree of modulation of the reproduced signal of each of the plural marks test-recorded with the plurality of second recoding light intensity values in the light intensity learning region and the allowable upper limit degree of modulation (Fig. 9 and 10, paragraphs 110-112); second light intensity calculation means for calculating recording light intensity corresponding to a target waveform distortion amount for the optical recording medium based on the waveform distortion amount of the reproduced signal of each of the plural marks test-recorded with the plurality of second recording light intensity values in the light intensity learning region and the target waveform distortion amount (Fig. 9 and 10, paragraphs 108-112); and optimum light intensity determination means for determining optimum recording light intensity at the recording light intensity ratio determined by the light intensity ratio determination means (Fig. 4, paragraphs 88-91).

Shimoda is deficient in disclosing an optical information recording/reproducing apparatus, comprising: light intensity ratio determination means for determining a ratio of the recording light intensity values in the respective portions of the recording waveform for recording information on the optical recording medium based on the recording light intensity corresponding to the allowable upper limit degree of modulation and the recording light intensity corresponding to the target waveform distortion amount.

However, *Takeda* discloses an optical information recording/reproducing apparatus, comprising: light intensity ratio determination means for determining a ratio of the recording light intensity values in the respective portions of the recording waveform for recording information on the optical recording medium based on the recording light intensity corresponding to the allowable upper limit degree of modulation and the recording light intensity corresponding to the target waveform distortion amount (Fig. 8, paragraphs 46-48). In addition, the same motivation is used as the rejection for claim 3.

As to **claim 7**, *Shimoda* discloses the optical information recording/reproducing apparatus wherein the light intensity ratio determination means compares the recording light intensity corresponding to the allowable upper limit degree of modulation with the recording light intensity corresponding to the target waveform distortion amount (Fig. 4 and 5, paragraphs 85-88, 91), and the light intensity ratio determination means determines the ratio of the recording light intensity values using the recording light intensity corresponding to

the target waveform distortion amount when the recording light intensity corresponding to the allowable upper limit degree of modulation is not lower than the recording light intensity corresponding to the target waveform distortion amount (Fig. 6, 10, paragraphs 117-119), while the light intensity ratio determination means instructs the recording waveform control means to output a recording waveform having the first recording light intensity for a part of an intermediate portion of the recording waveform for a mark whose length is not shorter than a second mark length that is longer than the first mark length when the recording light intensity corresponding to the allowable upper limit degree of modulation is lower than the recording light intensity corresponding to the target waveform distortion amount (Fig. 1 and 12A, paragraphs 66-72).

5. **Claims 10, 12 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Pub. No. 2002/0036963 A1 to *Shimoda* in view of U.S. Patent No. 6,545,958 B1 to *Hirai et al*.

As to **claim 10**, *Shimoda* is deficient in disclosing the method for learning recording light intensity comprising extending a time period of the part of the intermediate portion of the recording waveform when the recording light intensity corresponding to the allowable upper limit degree of modulation is lower than the recording light intensity corresponding to the allowable waveform distortion amount and the part of the intermediate portion is set to have the first recording light intensity.

However, *Hirai* discloses the method for learning recording light intensity comprising extending a time period of the part of the intermediate portion of the recording waveform when the recording light intensity corresponding to the allowable upper limit degree of modulation is lower than the recording light intensity corresponding to the allowable waveform distortion amount and the part of the intermediate portion is set to have the first recording light intensity (Fig. 11, column 18, lines 10-36).

Shimoda and *Hirai* are analogous art because they are from the same field of endeavor with respect to optical devices.

At the time of invention, it would have been obvious to a person of ordinary skilled in the art to have created an optical information recording apparatus that has a light irradiation means as well as extending the time period of the part of the intermediate portion of the recording waveform as taught by *Hirai*. The suggestion/motivation would have been in order to adjust the light intensity of the laser light (Fig. 11, column 18, lines 10-36).

As to **claim 12**, *Shimoda* discloses the method for learning recording light intensity comprising setting a part of the intermediate portion of the recording waveform to have the first recording light intensity when the recording light intensity corresponding to the allowable upper limit degree of modulation is lower than the recording light intensity corresponding to the target waveform distortion amount and the intermediate portion is set to have the second recording light

intensity (Fig. 9 and 11, paragraphs 110-114). In addition, the same motivation is used as the rejection for claim 10.

As to **claim 13**, *Shimoda* is deficient in disclosing the method for learning recording light intensity comprising extending a time period of the part of the intermediate portion of the recording waveform when the recording light intensity corresponding to the allowable upper limit degree of modulation is lower than the recording light intensity corresponding to the target waveform distortion amount and the part of the intermediate portion is set to have the first recording light intensity (Fig. 11, column 18, lines 10-36). In addition, the same motivation is used as the rejection for claim 10.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANEETA PATANKAR whose telephone number is (571) 272-9773. The examiner can normally be reached on Monday-Thursday 8-5, Second Friday, 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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